Pembroke, Wadham, and Oriel, and, we believe, at Queen's and Magdalen, and one is to be given next February at Brasenose for Mathematics or Natural Science. It may not be superfluous to add that those who do not succeed in obtaining such a high reward as a fellowship, if they have taken a first class in the Natural Science School at Oxford, rarely fail to obtain valuable appointments after taking their degree, as Natural Science masters or lecturers at various colleges and public schools, whilst some are induced to stay up at Oxford as demonstrators and assistants to the professors, or else as college lecturers or private tutors.

In addition to the purely college rewards just mentioned, the University offers the following valuable emoluments, the first two only open to those who have taken their B.A. degree. The Radcliffe travelling fellowship, of the value of 200*l.* a year, and tenable for three years, of which eighteen months *must* be spent abroad, and the holder must be studying medicine and ultimately take his medical degree at Oxford. The Burdett Coutts Geological Scholarship of about 60*l.* for two years. A gold medal for the Johnson Memorial Prize Essay on some Natural Science or mathematical subject, awarded every four years. Various special prizes for essays, &c., given to the University by various benefactors.*

In addition to these, all the various open University Scholarships and prizes, so numerous at Oxford, are, of course, open to Natural Science students as to all others.

Every term, speaking generally, courses of lectures are given on the following subjects :—

Chemistry, by Prof. Sir B. C. Brodie, Bart., F.R.S.; Physiology and Zoology, by Prof. Rolleston, F.R.S.; Geology, by Prof. Phillips, F.R.S.; Physics (Heat, Light, and Electricity), by Prof. Clifton, F.R.S.; Botany, by Prof. Lawson, M.A.; Zoology (Invertebrate), by Prof. Westwood, F.R.S.; Mineralogy (occasionally), by Prof. Maskelyne, F.R.S. These lectures are open free to all undergraduates.

Lectures are also given at various Colleges, as at Christ Church, on Chemistry (advanced), by Mr. Vernon Harcourt, F.R.S.; on Physics and Mechanics, by Mr. Reinold; and on Physiology, by Mr. Thompson; at Merton on Chemistry (theoretical); at Magdalen on Physiology and Chemistry; at Wadham on Physics and Mechanics, which are open free to the members of the respective Colleges, and on payment of a small fee to others.

In addition to these lectures, a large amount of practical work is made an absolute necessity for a degree in the Natural Science School. Every opportunity for this practical work is given at the Museum, where, under one roof, all the various splendid collections of comparative anatomy, geology, mineralogy, and instruments for experimental, physical, and chemical science are collected together, and are made available for instruction. It is here also that all the University lectures are given, with the exception of those on Botany, which are given in the Botanical Museum in the Botanic Gardens. The illustration on the opposite page is from a photograph of the Museum taken before the building of the New Physical Laboratory. It would occupy far too much space in the present article to describe the contents of this Museum, adequately. Suffice it to say that on the left-hand side are the rooms occupied by Professor Rolleston, for practical work at physiology and comparative anatomy and osteology, fitted up with every convenience, and freely communicating with the general collection of specimens on these subjects placed in the Central Court. On the opposite side are the rooms and collections of Professor Phillips in geology and mineralogy, and above these in the gallery the magnificent collection of insects and invertebrata under the superintendence of Prof. Westwood. The building on the right-hand side, built apart from the Museum, but connected with it by a narrow passage, is the chemical laboratory. On the opposite side of the central building, not shown in the illustration, is the fine building lately erected as a physical laboratory for Professor Clifton. This building, which is the most perfect physical laboratory in the world, was only opened this term. The collection of physical science apparatus is very valuable, most of it having come from the last Paris Exhibition.

There is every facility given at the Astronomical Observatory for a practical acquaintance with astronomical instruments and methods of observation. There is a good chemical laboratory at Christ Church, as well as one at Magdalen, where, also, the valuable collection of fossils and minerals of the late Dr. Daubeny is open to all working at these subjects. Magdalen, also, has a very good astronomical telescope, and various modern meteorological instruments. A collection of minerals and geological specimens is also in process of formation at Merton. The Botanic Gardens contain every requisite for the thorough study of botany, and in the Museum in connection with it, is a very large and valuable herbarium containing collections of plants for every quarter of the globe.

Lastly, we have to mention what will ultimately tend as much, if not more, than anything else, to make Oxford the great home of Natural Science in the future. We allude to the splendid Radcliffe Scientific Library in the Museum. This Library occupies one side of the building, and consists of two great rooms each 80 feet long, 24 feet wide, and 20 feet in height. It contains the finest collection of scientific books almost in the world, certainly the most accessible. The importance and value of this fine Library cannot be over-rated. Connected with the Bodleian and the Radcliffe Libraries, it contains, as far as possible, complete sets of all the Transactions and Publications of every recognised Scientific Society in the world, and all the new scientific works are added as soon as published. Admirably arranged, admirably managed, freed from all narrow restrictions as to admittance, and open daily from ten to four, and twice a week in the evening from seven to nine, every possible facility is given to those who are working at Natural Science. We do not hesitate to say that until such libraries are founded in other places, Oxford cannot help becoming the great centure of scientific culture in England.

J. P. EARWAKER

NOTES

UNFORTUNATELY the weather does not appear to have been very favourable for the observation of the Eclipse in Sicily. The following telegram has been received from Mr. Lockyer, dated Catania, December 22, 9.40 P.M. :—"Observations of eclipse greatly interfered with by unfavourable weather, but substantial results have been secured. A definite [contact?] of the corona was noticed at a height of about one-third of radius as presented for corona. The sphero-spectroscopic method for first contact was successfully employed. The American observations of last year upon the corona are confirmed." The Astronomer Royal has received the following telegram, which was despatched by Lord Lindsay immediately after the Eclipse. Lord Lindsay's place of observation was La Maria Louisa, which appears to be near Puerto, the mainland station opposite Cadiz :—"Photographs successful. Two good pictures of corona. Polariscope doubtful. Sketching good. Corona [gives] continuous spectrum, no lines. Broken sky." From telegrams received from other members of the expedition, it is hoped that the weather may have been more favourable at the more westerly stations. At Oran, however, we hear that dense clouds covered the sky for twenty minutes before the period of totality; and till after it was over. The previous day there had been a gale of wind.

---

* Thus a prize of 50*l.* was awarded last year for an essay "On Longevity" by an anonymous donor through the University; and a prize of 100*l.* is now offered for an essay to refute the materialism of the present age.

Dr. Russell, Lecturer on Chemistry at St. Mary's Hospital, has been appointed to the Chair of Chemistry at St. Bartholomew's Hospital, lately occupied by Dr. Matthiessen; who also, up to the time of his appointment at St. Bartholomew's, filled the Chair at St. Mary's.

Dr. Henry E. Armstrong has been appointed Professor of Chemistry at the London Institution, an office once held by Mr. W. R. Grove, Q.C., F.R.S., and subsequently by Mr. J. Alfred Wanklyn. Dr. Armstrong studied chemistry under Professors Hofmann, Frankland, and Kolbe, and has been associated with Dr. Frankland and the late Dr. Matthiessen in original researches. The *Pharmaceutical Journal* states that this appointment is connected with a project for establishing practical chemistry classes in the laboratory of the London Institution.

The American scientific journals record the death, in his twenty-ninth year, of Edward W. Root, Professor of Chemistry in Hamilton College, a pupil of Schneider, Rose, and Bunsen; From his grasp of mind, power of organisation, and clearness of enunciation of scientific truths, he was one of the most promising of the rising generation of chemists in America.

The days named for the reception of the different classes of objects at the Annual International Exhibition for 1871 are as follows:—Machinery, February 1, 2, 3, 4; scientific inventions, Feb. 6 and 7; educational works and appliances, Feb. 8 and 9; pottery and raw materials, Feb. 10 and 11; woollen and worsted fabrics and raw materials, Feb. 13 and 14; sculpture not applied to works of utility, Feb. 15 and 16; paintings applied to works of utility, Feb. 17; sculpture applied to works of utility, Feb. 18 and 20; engraving, lithography, photography, &c., Feb. 21; architectural designs, drawings, and models, Feb. 22; tapestries, carpets, embroideries, &c., Feb. 23; designs for all kinds of decorative manufactures, Feb. 24; copies of pictures, mosaics, enamels, &c., Feb. 25; paintings not applied to works of utility, Feb. 27 and 28.

The Royal Horticultural Society's meetings and shows at South Kensington for 1871 are fixed to take place on the following days, namely, on Wednesdays, January 18, February 15, March 1 and 15, April 5 and 19, May 3 and 17, June 7 and 21, July 5 and 19, August 2 and 16, September 6 and 20, October 4, November 1, and December 6. The date of the great provincial show at Nottingham, originally fixed for June 13—17, has been altered, and it is now arranged that it shall commence on June 27, and continue till July 1. The principal meetings at South Kensington will be those on March 15, April 19, May 17, June 7, and July 5, the latter being the National Rose Show

The days fixed for the Exhibitions of the Manchester Botanical and Horticultural Society, in the gardens at Old Trafford, next season, are, we understand, as follows:—The National Show, now become one of the most important events of the year, will commence on May 26, and continue till June 2; this will include the Royal National Tulip Society's Show on May 26, 27. In addition to this, a great Exhibition of American plants will be made by Mr. Anthony Waterer, of Knap Hill, the period extending from May 26 to June 17, and an Exhibition of Roses and Fruits will take place on July 7, 8.

The Royal Botanic Society has just issued schedules for its two spring shows in 1871, which are each to be of two days' duration, and are fixed to take place on March 22, 23, and April 12, 13. As usual, new plants and plants of economic interest are admissible, though not scheduled. The Society's summer shows are announced for May 25, 26 (Thursday and Friday), June 14, 15, and July 12, 13 (Wednesday and Thursday).

A discussion having been carried on in the French Institute on "Winds," M. de Fonvielle sent to the Secretaries a quotation from the works of the celebrated philosopher, M. Mariotte, the author of the "Law for the Expansion of Gases," explaining the fall of pressure noticed during the south-western winds by the direction of the aërial stream which blows from the lower parts of the atmosphere to the higher. He says, moreover, that winds coming from northern quarters descend instead of ascend, and he accounts in this manner for the augmentation of pressure. This note was published in the *Comptes Rendus* at the time.

M. Gauthier-Villars, the scientific publisher, has completed the publication of Father Secchi's work on the Sun. It comprises more than four hundred octavo pages, and will certainly be largely circulated when Paris is open. Father Secchi has written it in French, having secured the assistance of some learned Jesuits. It is not, however, merely a translation of his former Italian work on the same subject.

A correspondent of the *Gardener's Chronicle* has forwarded to that paper the following account of the condition of some of the nurseries near Paris, dated "Châtenay, Dec. 4, 1870.—I am sorry I have but sad news about the establishments; they are all deserted, and the magnificent collections are perishing. In detail I can only report of the establishments of MM. Croux and Durand Fils; the others near Bagneux, Châtillon, and Bourg-la-Reine we only passed several times at night, when marching to the batteries in course of erection, for the staying there during the daytime is not very agreeable on account of the shells from Vanvres, Montrouge, and Bicêtre. M. Croux's principal establishment at Châtenay is the quarters of the Staff of the Bavarian Artillery; the large Palm-house, sixty to eighty feet long, is occupied by the horses, the flower-tubs being made use of for cribs; the magnificent Conifers (Wellingtonias, Pinus Pinsapo, &c.), of which we found numbers of fine specimens, have all been cut down to form a fence along the road to Fontenay-aux-Roses, to prevent the French from having a look into our batteries from their forts. But the most sad sight is offered by the Jardin pour les études pomologiques, belonging to M. Croux, and situated near Aulnay. The beautifully trained fruit trees, after having been much broken by the pulling out of the wires, which were used for making gabions, are now completely eaten down by the 2,000 sheep and 80 to 100 cows shut up in the garden. Nor have the nurseries in the open field been spared; the stems of the young trees had to serve as stakes for gabions, while the branches were used for fagots. A similar sad sight is afforded at the branch establishment of M. Durand Fils, near Clamart; the greenhouses being, to a great extent, demolished by shot coming down here as thick as hail, and the plants they contain are dried up or frozen, for we had - 6° R. = 18° F. the day before yesterday, and yesterday morning a considerable fall of snow. It will be about the same with the other establishments not visited by me, and it may be taken for granted that the losses of these people are beyond replacement, and will bring many of them to the grave."

Silliman's *American Journal of Science and Arts* will, after the close of the present year, become a monthly journal. It was founded by Prof. Silliman in 1818, and now numbers 100 volumes. From its commencement it has been the leading vehicle for the original papers of American scientists.

British botanists will be glad to learn from Messrs. Longman's lists that Mr. Watson's "Cybele Britannica" may now be obtained from them at the reduced price of 5*s*. per volume. The three parts of the invaluable "Compendium" of the same work are also issued by them in one volume at 10*s*. The author considers that this "must largely supersede the usefulness of the original work," of which he still invites any possessor "to apply to him for a free copy of the Compendium as a necessary supplement thereto." He has already sent a copy to all the possessors of the four volumes with whose addresses he is acquainted.

DR. BUCHANAN, the Professor of Physiology in the University of Glasgow, has just published the third part of his "Essays on the Forces that carry on the Circulation of the Blood." The present part is engaged with the consideration of the Pneumatic Forces. He is of opinion that the ordinary acts of respiration powerfully influence the current of blood in its passage through the whole vascular system. In proof of this he adduces the collapse of the large veins of the neck observed during inspiration, and the fulness during expiration, the former of which phenomena he attributes to the tendency to a vacuum existing in the chest, and the pressure of the external air which empties the great veins of their blood and forces it into the chest ; whilst the latter he considers to be due to the fact that, after the termination of an inspiration, no more blood, or very little, enters the chest till the beginning of the next inspiration, and the consequence is that the blood propelled onward by the force of the heart accumulates in the veins near the chest to an extent proportionate to the length of the interval. Again, in order to show that the influence of the respiration extends to the arterial system, he refers finally to the united testimony of all physiologists, who are agreed that the pulse is less voluminous and feebler during inspiration, whilst it recovers its volume and strength during expiration and the period of repose ; and, secondly, to the movements of the brain when exposed by removal of the part of the skull. Dr. Buchanan draws attention also to the oscillations of the hæmastatic column observed by Hales, which are clearly associated with the respiratory acts ; to the phenomena of asphyxia, and those of the fœtal circulation ; the difficulty respecting the latter he ingeniously turns in his favour, by maintaining that, inasmuch as no movements of respiration take place here, the absence of this help to the circulation is supplied by the free communication existing between the right and left sides of the heart, whereby both ventricles are able to exert their influence in maintaining the system in circulation.

THE valuable museum at Brighton is being utilised by the delivery of conversational lectures in the geological, entomological, antiquarian, economical, and sanitary departments. The object is to explain the specimens, and we learn from the *Brighton Examiner* that the plan has been well carried out and has proved very attractive.

GUSTAV ROSE, one of the veterans of German geology, celebrated the 50th anniversary of his doctorate on the 9th inst., when the learned societies of Berlin sent delegates to offer him their good wishes and congratulations.

THE *British Medical Journal* prints the following as an appropriate pendant to the condemnation of tobacco by Kerckringius, cited in our issue for December 8, by John Allen, M.D., F.R.S., on the Evils of Alcohol (*Synopsis Universæ Medicinæ Practicæ*, Amstelodami, MDCCXXX, cap. xvi.) "There remains another sort of poisons, such as vinous spirits and intoxicating distilled liquors. The frequent and excessive tippling of these, as is the practice of each returning day, hath destroyed myriads of mortals, nay, hundreds of thousands more than all the poisons put together ; whence I am wont to style this most pernicious evil emphatically THE HARM. It proves not only the parent of very many, and those the worst of diseases, but to numbers suddenly fatal ; upon which accounts, if it deserve not the appellation of poison, I must confess I know not what does. Spirit of wine, taken inwardly, is death to almost all creatures ; to vegetables of all denominations without exception, when applied by way of pabulum, even to the parent vine, whence itself is derived. The generous physician hath an unpleasant task upon his hands. Men addicted to these spirituous liquors abominably sacrifice day, night, and themselves, to continually sipping, as it were, a liquid fire. When all digestion is lost, the solids unbraced, the juices corrupted ; when the human fabric, which hath been long tottering, is just falling to the ground—then are we called in to its support. What must we do ? Even as town-scavengers (*scabini*) ; and ten to one but, after all the abandoned sot returns at once, like a sow that is washed, to wallowing in the mire. Thus he irrevocably prostitutes his health to the last, being prodigal of that life of which he ought to be most tender ; and his early end is the consequence of intemperance. What advantageth then the doctor, and what the divine? Fruitless would be the endeavours even of a Luke himself in both his capacities, either as physician or as evangelist. Deaf as a rock to all counsel or persuasion, he runs into the very arms of death, and courts destruction. To this he is prompted by an eternal thirst, which he greedily indulges ; and the greater the indulgence, the greater the thirst—the thirst of those pernicious distilled liquors, with which the tragic scene is expeditiously closed ; and the dismal catastrophe, in the last moments, is the finishing both his bottle and himself."

A CORRESPONDENT in Honolulu, after making a botanical tour in the Kaala range, says, "Botanising on this island is not without considerable danger. Only imagine descending a steep decline of 70°, which had to be done chiefly by swinging from the roots of one tree to the branches of the next one below, and that at a height of 2,000 feet above the deep gorge beneath our feet." Nature, however, seems in all cases to provide a reward for her admirers, who voluntarily expose themselves to such dangers for the purpose of bringing to the eye of science her numerous hidden beauties, for the writer continues to say, he was not a little surprised by the discovery of a violet with splendid snow-white waxy flowers, some of which were almost half an inch in diameter and exquisitely perfumed. He considers it probably a variety of *Viola chamissoniana*, which he found in its ordinary state lower down in the forest ; but the pure white flowers stretching out their long peduncles above the surrounding low undergrowth, and luxuriating in the full sunshine of an azure blue sky, far exceed in beauty those of *V. chamissoniana*, which are of the ordinary violet colour.

FROM the notes of a short tour through the eastern parts of the provinces of Echigo, Iwashiro, and Uzen, made in June and July of the present year by one of H.M. Consuls in Japan, we extract the following :—"In passing through Yazawa and some other villages, we found hemp, said to be of good quality, grown in frequent localities on the way, and vegetable wax trees in abundance. I was informed at Tsugawa that the extraction of lacquer from the same tree is prohibited there, the tree being reserved for the production of wax. As the lacquer is obtained by making incisions in the bark of the tree while young, the result of which is the death of the tree before coming to full maturity, both products can hardly be obtained from the same tree. This appears to be the reason for the prohibition. At Yonezawa, on the other hand, the extraction of lacquer from the tree is permitted, the result of which is, that little vegetable wax is produced there. I observed that many of the trees in the neighbourhood of Tsugawa had been injured, apparently, by the severity of last winter." The trees here alluded to are those belonging to the genus *Rhus*. The most important wax-producing species in Japan being *R. succedanea* L., the bulk of the varnish being yielded by *R. vernicifera* Dec. The wax is obtained from the small fruits, while the varnish is procured by tapping the trees. The species met with at Tsugawa must have been *R. succedanea*, as this species yields both wax and varnish. Several other species also yield varnish more or less in China and Japan. Little is known about the preparations of this varnish as used in the ancient lacquer work of the Japanese ; and it is said that the modern workers in this article in Japan have themselves lost the secret of its preparation.